MINERALOGY AND PETROGRAPHY.[1]

New Minerals.—*Aguilarite.*—A new regular mineral from Guanajuato, Mexico, has been named by Genth[2] *aguilarite.* It is imbedded in colorless calcite as brilliant iron-black skeleton dodecahedrons, elongated in the direction of one of the crystallographic or one of the octahedral axes. The mineral is sectile. It possesses no cleavage, has a hardness of 2.5 and density of 7.586. Its composition (Ag = 79.07; S = 5.86; Se = 14.82) corresponds to Ag_2S+Ag_2Se. Upon alteration it yields a scaly iron-black substance, with the composition of cupriferous stephanite, and metallic silver.——*Griphite.*—In the granite at the Riverton Lode, near Harney City, South Dakota, occur kidney-shaped masses of a phosphate, dark brown in reflected light, and yellowish-brown or brown in transmitted light. It is amorphous, and has no cleavage. Its density is 3.401, and its hardness 5.5. It is easily fusible in the flame of a candle, and is soluble in acids. Its composition, as found by Mr. Headdon,[3] is:

P_2O_5	MnO	CaO	Al_2O_3	FeO	MgO	Na_2O	K_2O	Li_2O	H_2O	Ce	F	Ues
38.52	29.64	7.47	10.13	4.00	.15	5.52	.30	tr.	4.29	.11	tr.	.16

On account of its composition, which cannot be represented by a simple formula, the author calls the substance *griphite,* from γριφος, a puzzle.——*Kaliborite*[4] is associated with pinnoite and boracite in the upper layers of the Kainite zone at Stassfurt, Germany. It is a white, granular substance with a density of 2.05. It is slightly soluble in water, and dissolves easily in dilute acids. Its composition is:

B_2O_3	MgO	K_2O	H_2O	
57.46	12.06	6.48	24.00	$= K_4Mg_9B_{48}O_{83}+39H_2O.$

——The new mineral *falkenhaynite,* described by Scharizer[5] from Joachimsthal, Bohemia, is regarded by Sandberger[6] as a member of the bournonite group, differing from annivite in containing more antimony and less arsenic than this latter, and almost no bismuth. Its composition, as found by Scharizer, is:

S	Sl	As	Bi	Cu	Fe	Qu
25.76	24.30	5.02	.34	39.77	2.83	1.99

[1] Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

[2] *Amer. Jour. Sci.*, May, 1891, p. 401.

[3] *Amer. Jour. Sci.*, May, 1891, p, 415.

[4] Chemkier Zeits., 1889, p. 1188. Ref. *N. J. B. f. Min.*, etc., 1889, I., p. 237.

[5] Jahrb. I. K. K. Geol. Rich., 1890, p. 433.

[6] *Neues Jahrb. f. Min.*, etc., 1891, I., p. 274.

The mineral is steel-gray, with a grayish-black streak.——*Sanguinite*[7] is associated with argentite and proustite at Chañarcillo, Mexico, as bronze-red scales, containing sulphur, arsenic, and silver. By reflected light the scales are black; by transmitted light they are red. The streak is dark purplish-red. Crystallization probably hexagonal. The material available was too scanty to allow of analysis.——*Kallicite*, from Grube Friedrich, near Schöristein, on the river Sieg, in Prussia, is a nickel sulph-antimonide of composition, according to Laspeyres,[8] as follows:

S	Sl	As	Bi	Fe	Co	Nic
14.391	44.942	2.016	11.758	.276	.889	26.943

equivalent to NiAsS+2NiBiS+13NiS6S. Its specific gravity is 7.011, and its position in the systematic classification of minerals is with ullmannite.——*Sychnodymite* is described by the same writer as a new cobalt-copper-sulphide from the Kohlenbach Mine, near Siegen, Prussia, corresponding to polydimite among the nickel compounds. The mineral occurs in little twinned octahedra of a darker color than those of polydimite. It is associated with quartz, tetrahedrite, and pyrite. Its density is 4.758, and composition:

S	Cu	Fe	Co	Ni	
40.645	18.984	.927	35.786	3.658	$=(CoCuNiFe)_4S_5$

Mineralogical News.—Honey-yellow or greenish-yellow crystals of *axinite* from Franklin, N. J., have an unusual tabular habit, with the P^1 face largely developed. They also contain several rare planes, well developed, and a new face, $\frac{3}{2}P^1_{\bar{3}}$. Their axial ratio is $a:b:c=4921:1:.4797$, and $\alpha=82°\ 54'\ 13''$, $\beta=91°\ 51'\ 43''$, $\gamma=131°\ 32'\ 19''$. Their specific gravity is 3.358, and composition:[9]

SiO_2	B_2O_3	Al_2O_3	Fe_2O_3	CuO	QuO	MnO	MgO	CaO	Ign
.76	42.77	5.10	16.73	.12	1.48	13.69	.23	18.25	.76.

Lamellar masses of the same mineral have a density of 3.306. Their composition does not vary much from that of the crystals. Crystals of the same mineral from Guadalcazar, Mexico, are associated with white feldspar. These are sage-colored. They are tabular parallel to ^1P, and their faces are frequently rounded. Granular scaly masses identical in character with the crystals yielded:

SiO_2	B_2O_3	Al_2O_3	Fe_2O_3	CuO	MnO	MgO	CaO	Ign
42.85	5.17	16.96	5.00	.19	9.59	.87	18.49	.75

[7] Miers. *Mineralogical Magazine*, IX., p. 1.

[8] *Zeits. f. Kryst.*, XIX., 1891, p. 12.

[9] Genth, Penfield and Pirsson. *Amer. Jour. Sci.*, May, 1891, p. 394.

The density of the crystals is 3.299. A small fragment of the same mineral from McKay's Brook, Northumberland Co., N. S., was not large enough for analysis.——Massive rose-colored *eudialite*[10] from Magnet Cove, Ark., has a specific gravity of 2.810. Analysis gave:

SiO_2	QuO_2	Ta_2O_5(?)	FeO	MnO	MgO	CaO	Na_2O	K_2O	Cl	Ign.
51.83	11.45	.39	4.37	.37	.11	14.77	13.29	.43	1.42	1.88

——*Sphene* occurs at Magnet Cove, in small brown or brownish-yellow crystals, associated with the constituents of elæolite-syenite. They are simple combinations of ∞P and $-P$.

SiO_2	TiO_2	FeO	MgO	CaO	Ign	Sp.Gr.
.57	30.84	39.35	.73	tr.	28.26	3.457

——At the same locality, in a coarse-grained calcite, are crystals and crystalline grains of *monticellite*, associated with crystals of magnetite and apatite. The habit of the rare mineral is short prismatic, with pyramidal terminations $\infty P\breve{\infty}$ and $2P\breve{\infty}$ largely developed (axial ratio $= .4337 : 1 : .5757$). The hardness is S; density, 3.108. The mineral, upon analysis, gave, as a mean of two sets of determinations:

SiO_2	Al_2O_3	MnO	FeO	MgO	CaO	P_2O_5	Ign
33.46	.17	1.12	5.01	20.61	35.24	2.03	2.28

deducting the P_2O_5 as apatite, which was present in the assay, the figures became:

SiO_2	Al_2O_3	MnO	FeO	MgO	CaO	Ign
35.14	.19	1.17	5.25	21.64	34.21	2.40

corresponding to $(Mg,Mn,Fe)_2SiO_4 + Ca_2SiO_4$.——A light-gray seleniferous *bismuthinite*, consisting of slender crystals imbedded in clay, yielded Genth:[11] Bi = 77.54; S = 14.06; Se = 8.80, corresponding to $4Bi_2S_3 + Bi_2Se_3$. It probably came from Guadalajara, Mex. Its density is 6.306. As the mineral was sent to the author as a specimen of *guanajualite*, an analysis of a specimen of this from an old German collection was made in order to discover whether or not it should be regarded as a distinct species. The examination resulted in the figures: Bi = 68.86; S = 4.68; Se = 25.50, corresponding to $Bi_2S_3 + 2BiSe_3$.

——Messrs. Melville and Luidgren[12] have contributed to our knowledge of the minerals of the Pacific slope some interesting observations in *cinnabar*, *metacinnabarite*, *struneyerite*, and a few other rare substances, among which are the recently described minerals *knoxvillite*

[10] Cf J. F. Williams. *Amer. Jour. Sci.*, Dec., 1890.

[11] *Amer. Jour. Sci.*, May, 1891, p. 402.

[12] Bull. U. S. Geol. Survey, No. 61.

and *redingtonite.* Cinnabar from the New Idria Mine, California, has a prismatic or rhombohedral habit, with the basal plane and a series of rhombohedra and tetarto-trapezohedrons well developed. The crystals are made up of layers of dextro- and lævo-rotatory material. At Knoxville acicular crystals occur with $-\frac{4}{5}R$, and ∞R. They encrust metacinnabarite that occurs in seams in a vesicular marcasite. An analysis gave: HgS = 98.48; FeS = .69; SiO_2 = .71. Analysis of redingtonite and knoxvillite yielded:

	SO_3	Al_2O_3	Cr_2O_3	Fe_2O_3	FeO	NiO	MnO	MgO	Res	H_2O at 100°
R.	35.35	5.14	7.51	.18	4.58	1.00	tr.	1.85	3.46	27.09
K.	35.91	4.84	7.41	15.36	3.81	.835		3.22	1.74	9.30

	H_2O above 100°
R.	14.34
K.	17.60

Copiapite in soft masses and sulphur-yellow scales and crystalline particles contains:

SO_3	Fe_2O_3	FeO	MnO	MgO	H_2O
39.97	26.54	.46	.21	3.06	30.43

Stromeyerite from the Silver King Mine, San Bernardino county, Cal., has a specific gravity of 6.28, a steel-gray color on a fresh fracture, and a composition: Ag = 53.96; Cu = 28.58; Fe = .26; S = 15.51; Res = 1.55. The rare chromium chlorite *Kotschubeite* is found in the serpentine at Green Valley, Cal., as thin, hexagonal plates arranged in rosettes. The plates are twinned monoclinic crystals, with an optical angle of about 30°, and an acute bisectrix nearly normal to oP. The type mineral from the Urals is in apparently hexagonal pyramids. The composition of the California mineral is:

SiO_2	Cr_2O_3	Al_2O_3	FeO	MiO	CaO	MgO
35.74	11.39	6.74	1.23	4.87	.183	35.18

Loss at 105°	Loss above 105°
.365	12.68

——In a note on some Canadian minerals Mr. Harrington[13] mentions the existence of *göthite* crystals, forming a velvety druse on hematite, calcite, and other minerals at Clifton, N. S. At the same place radiating needles of the iron compound are found capped with rhombohedra of calcite. One specimen yielded: Fe_2O_3 = 88.92; Mn_2O_3 = .14; H_2O = 10.20; SiO_2 = .32. A white to pale apple-green *serpentine* occurs as veins in a darker serpentine at an asbestos quarry near

[13] *Can. Record of Science*, Vol. IV., No. 2, 1890.

Coleraine, in the Eastern Townships. When first mined it is so soft as to be easily squeezed between the fingers, but on exposure it becomes harder until a hardness of 3.5 or more is reached. It then has a density of 2.514, and a composition: $SiO_2 = 43.13$; $MgO = 42.05$; $FeO = .37$; $H_2O = 13.88$, with traces of MnO, NiO, and CaO. Cinnamon *garnet* from Ottawa county, Ont., has a density of 3.58, and a rose-red *almandine* from the Laurentian gneiss at Murray Bay, Que., has a specific gravity of 2.59. Small red *spessartites*,[14] imbedded in the feldspar and muscovite of a coarse granite vein at Villeneuve Mine, Ottawa county, are much heavier. Sp. gr. = 4.117. The composition of these is:

	SiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	CaO	MgO	Loss
Cinnamon	36.22	18.23	7.17		.63	37.39	tr.	.70
Almandine	37.97	22.44	2.39	26.12	1.18	5.27	5.42	
Spessartite	36.30	19.20		10.66	30.06	3.07	.43	.31

From the dump heaps of the Grant and Emerald Mines, in Buckingham, in the same county, specimens of mountain cork and mountain leather were obtained that yielded:

SiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	CaO	MgO	Loss	Sp. Gr.
53.99	.55	1.00	10.99	2.19	12.53	16.25	2.56	3.05

Since pseudomorphs of *asbestos* after pyroxene are found in the vicinity, it is thought that the material analyzed may be of the same nature. *Dawsonite* and *ittnerite* occur at the Corporation Quarry, on the west side of Montreal Mountain, and fine chalcedony concretions are imbedded in the clay between Irvine and the Cypress Hills, in the northwest territory.——The analyses of several minerals are given in a recent bulletin of the U. S. Geol. Survey,[15] among which the following are the most interesting: (1) *petalite*, from the spodumene locality at Peru, Me.; (2) *spessartite*, from the Mica Mine, Amelia county, Va.; (3) *willemmite*, Trotter Mine, Franklin, N. J.; (4) *kaolin*, from the Waterfall Mine, Gunnison county, Col.

	SiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	ZnO	CaO	Na_2O	K_2O	Li_2O	P_2O_5	H_2O and Loss
(1)	77.29	16.95	tr.	tr.				2.39	tr.	2.62		1.03
(2)	35.35	20.41	2.75	1.75	38.70		.94					.27
(3)	27.41					68.86						.25
(4)	47.28	36.19	tr.				.42	.51	5.74		.57	8.72

Triplite, from a tin mine near Rapid City, S. Dak., gave:

Al_2O_3	Fe_2O_3	FeO	MnO	CaO	Na_2O	P_2O_5	H_2O	F	SiO_2	Cl	CO_2
8.74	2.36	1.97	29.13	6.72	5.25	39.68	3.67	2.35	.43	.25	.26

besides traces of MgO and K_2O, and .13 per cent. LiO_2.

[14] *Can. Record of Science*, October, 1890, p. 225.

[15] Bull. No. 60, U. S. Geol. Survey, pp. 129–137.